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## HISTORY OF THE U.S. GOAT INDUSTRY

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### Abstract

Goats were first domesticated in the Fertile Crescent and then spread throughout the world. Goats were brought to North America into the southwestern U.S. in the 17<sup>th</sup> century by early Spanish explorers and clergy. These goats are the ancestors of the Spanish goat of Texas and the Lamancha breed of California. English and other European settlers also brought their goats as they moved into the eastern U.S in the 18<sup>th</sup> century. Angora goats were first imported in the U.S. in the mid-19<sup>th</sup> century and the earliest importation of officially recognized dairy goat breeds occurred in the late 19<sup>th</sup> century and early 20<sup>th</sup> century. Most recently the Boer and Kiko goats were imported into the United States in the late 20<sup>th</sup> century. The numbers of goats have fluctuated over the years but generally, have increased. However, Angora numbers have plummeted precipitously after the repeal of a production incentive program.

**Keywords:** History, Goats, Goat Industry, Domestication

### Introduction

Goats (*Capra hircus*) are not native to North America and were introduced to the continent by European explorers and settlers. The type of goat raised in Europe over the centuries were the goats that populated the livestock landscape in North America. Goats (*Capra hircus*) were domesticated during the late Neolithic, approximately 10,500 years ago, in the Fertile Crescent (Alberto et al., 2018; MacHugh and Bradley, 2001; Figure1). The ancestor of the domestic goat is the bezoar (*Capra aegagrus*); however, the domestication of the goat may have resulted from multiple domestication events at several different geographical locations (Kahila Bar-Gal et al., 2003; Schlumbaum et al., 2010) but one major single domestication event has given rise to nearly all modern domestic goats (Akis et al., 2014; Kadowaki et al., 2016). Evidence for this single major domestication event is that more than 90% of present-day domestic goats belong to haplotype A while less than 10% belong to the other five haplotypes (Naderi et al., 2007).

Ancient goat DNA found in bones from an archeology site in eastern Turkey belonged to haplotype A (Akis et al., 2014). Also, ancient goat DNA extracted from bones found in the oldest known farming villages in the southern Caucasus, present-day Azerbaijan, yielded haplogroup A, which is in stark contrast to DNA extracted from present-day bezoars found in the region (Kadowaki et al., 2016). This implies that present domestic goats arose from a domestication event that took place in southeastern Anatolia (Colli et al., 2016; Taberlet et al., 2008). Domestic goats were highly portable and could easily be herded along migration routes; thus, the spread of domesticated goats from the Fertile Crescent to Europe and Africa in the west and India in the east was a quick and easy process.

### Europe

As the domesticated goat spread from the Fertile Crescent into Europe, humans exerted minor selection pressure. The largest genetic change happened through natural selection and random genetic drift, the latter causing genes to be fixed in a small population (Lande, 1976). As humans exerted selection pressure on domesticated goats, geographical differences arose. Presently there



Figure 1. Fertile Crescent.

are three distinct clusters of related groups in Europe (Canon et al., 2006). In Figure 2, the eastern-most circle represents present-day goat breeds in the Fertile Crescent and descendants of the first domesticated goat. The second-eastern-most circle (green) represents goat breeds in the central Mediterranean, the third-eastern-most circle (blue) represents goat breeds in northern Europe, and the western-most circle (red) represents goat breeds in the western Mediterranean. The goat breeds in the western Mediterranean are more closely related genetically to goat breeds in the Fertile Crescent than are goats in northern Europe. This is because the migration of domesticated goats out of the Fertile Crescent followed a route along the northern coast of the Mediterranean Sea but also along the southern coast (Pereira et al., 2009).

Two major historical events shaped the raising of goats in Europe, especially northern Europe. The first event, which happened approximately 3,000 years after the domestication of the goat, and was a small mutation in the human population (Laland et al., 2010). This mutation was in a regulatory region near the gene for lactase that allowed lactose tolerance to persist into adulthood (Fan et al., 2016; Sabeti et al., 2006). With this mutation, goats and cattle could serve another important role other than meat and hides. Milk is a complete food and easily digested. This mutation was so important that nearly all Europeans and people of European descent carry this mutation. The second event was the defeat of the Umayyad Caliphate army by Charles Martel and his Frankish troops near Poitiers (central France) in 732 AD. The Umayyad Caliphate conquered North Africa and swept into the Iberian peninsula (Spain and Portugal) in 711 AD (Cachia, 2017) and soon thereafter, established settlements in southwestern France (Gleize et al., 2016).

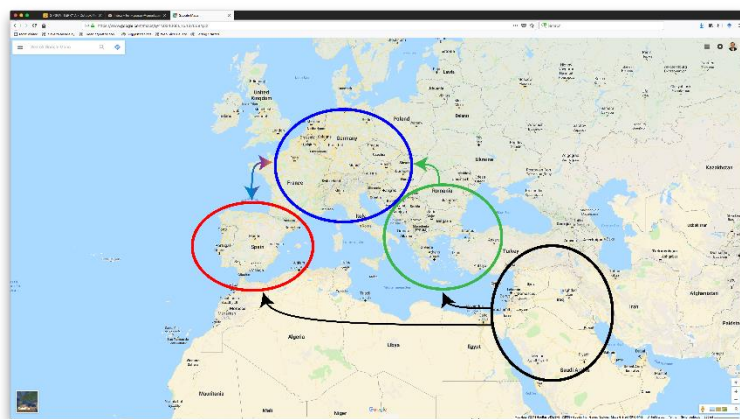


Figure 2. Migration Paths of Domesticated Goat from Fertile Crescent to Europe

In 732 AD, Abd ar-Rahman, Umayyad governor of Iberia, marched his forces north to the city of Poitiers, where he engaged the Frankish troops. Charles Martel and the Frankish forces were able to attack the encampment of the Umayyad forces. Fearing that their loot would be taken, some of the Umayyad forces broke ranks and returned to defend their encampment. However, this maneuver drove the Umayyad forces into disarray and proved fatal for their leader, Abd ar-Rahman. With the death of Abd ar-Rahman, the Umayyad forces retreated to southern France without breaking their camp (Watson, 1993). One of the items left behind by the fleeing Umayyad forces were the goats that they used for milk and cheesemaking. The majority of the Umayyad forces were composed of peoples of North African origin, also known as Moors or Maures, in French. According to tradition, cheesemaking using goat's milk in this region of France had its start with this failed invasion and has grown to be a major industry. The iconic Sainte-Maure goat cheese is the most popular style of goat in the world and is produced in the area around Poitiers.

## United States

### *Importation/History*

Records and history of the importation of goats into North America are rare. However, the first goats in North America came with the Spanish explorers and missionaries as they traveled throughout the southern and southwestern future United States (Weber, 2000). The descendants of some of these goats from Spain are the Spanish goat of Texas and the Lamancha of California. As the Spanish explored the west coast, present-day southern California, and as a means of provisioning, the Spanish would release goats onto nearby islands. The released goats acted as a food larder and could be harvested as needed. Examples of this are the Channel Islands off the coast of southern California. Goats were probably placed on Santa Catalina Island of the Channel Islands off the coast of southern California by Spanish explorers for provisioning (Hess et al., 2018). Not so for San Clemente Island, onto which goats were introduced at the end of the 19<sup>th</sup> century, more than two centuries after goats were introduced onto Santa Catalina (Johnson, 1975) and well after California became the 31<sup>st</sup> state in 1850. However, it is possible that goats were introduced to San Clemente Island from Santa Catalina Island (Hess et al., 2018). As back in Spain,

only the hardiest goats survived to breed and to pass on their genes to the next generation in the new world.

The majority of the present dairy goat breeds were brought to the United States by English settlers. These early goats would have been descendants of the Old English Milk goat or goats from continental Europe. Dairy goat breeders formally organized into the American Milch Goat Record Association (AMGRA) in 1903, which was a necessary step for the “milch” goat show 1904 World’s Fair, in St. Louis, MO. In 1964, the AMGRA changed its name to the American Dairy Goat Association (American Dairy Goat Association, n.d.). However, not many dairy goats were shown at the 1904 World’s Fair and the main goat show featured Angoras with more than 300 entries from across the United States (Irwin, 2018). Angora goats were first developed in Asia Minor, Turkey, for their hair and were first introduced in the United States in 1849 by James P. Davis. Seven adult goats were a gift from Sultan Abdülmecid I of Turkey in appreciation for his services and advice on the raising of cotton. The word Angora is derived from Ankara, the capital of Turkey, and the word mohair is derived from the Arabic word “mukhayyar”, which means “select” or “selected”.

Angora goats began to thrive in the southwest, particularly in Texas (Ekarius, 2015). The latest breeds imported into the United States are the Boer goat from South Africa and the Kiko goat from New Zealand. The Kiko were first imported in 1992 (Wade, 2004) but were overshadowed by the importation of the Boer goat a year later. The Kiko goat was developed as a meat goat in New Zealand originating from European and feral goat stock. The Boer goat was developed in South Africa (Casey and Van Niekerk, 1988) from indigenous African and introduced European goat stock. The unique aspect of the Boer is that it was the only goat breed subjected to a central performance test for meat production (Campbell, 1984). Thus, the Boer goat selected intensively in South Africa for muscling and rate of growth (Sahlu et al., 2009).

### ***Current status***

The USDA National Agricultural Statistical Service (NASS) only inventoried Angora goats prior to 2005. Inventory numbers over the past 50 years (Figure 3) reveals that populations of Angora goats fluctuated between 1.5 and 2 million head with the vast majority of those Angoras found in West Texas. In 1995, President Bill Clinton and Congress repealed the National Wool Act of 1954, which provided incentive payments to wool and mohair producers. The final incentive payments were made in 1996 and one can see in Figure 3 the drastic decline in Angora inventory post-1997. Prior to 2005, the Texas Department of Agriculture (TDA) conducted an annual census of livestock including Angora goats and all goats; thus, it is possible to calculate other breeds, primarily Spanish goats. However before 1989, TDA only collected census data on the category of all goats; thus, prior to 1989, it is not possible to estimate different categories.

Although modest in numbers, dairy goats have seen a gradual increase over the past decade. Conversely, meat goats saw a sharp increase in the late 2000s, then an almost equally sharp decrease, and then leveled since 2013. Texas, which is the state with the largest meat goat inventory (Figure 4), suffered a severe drought in 2011, which saw record numbers of goats

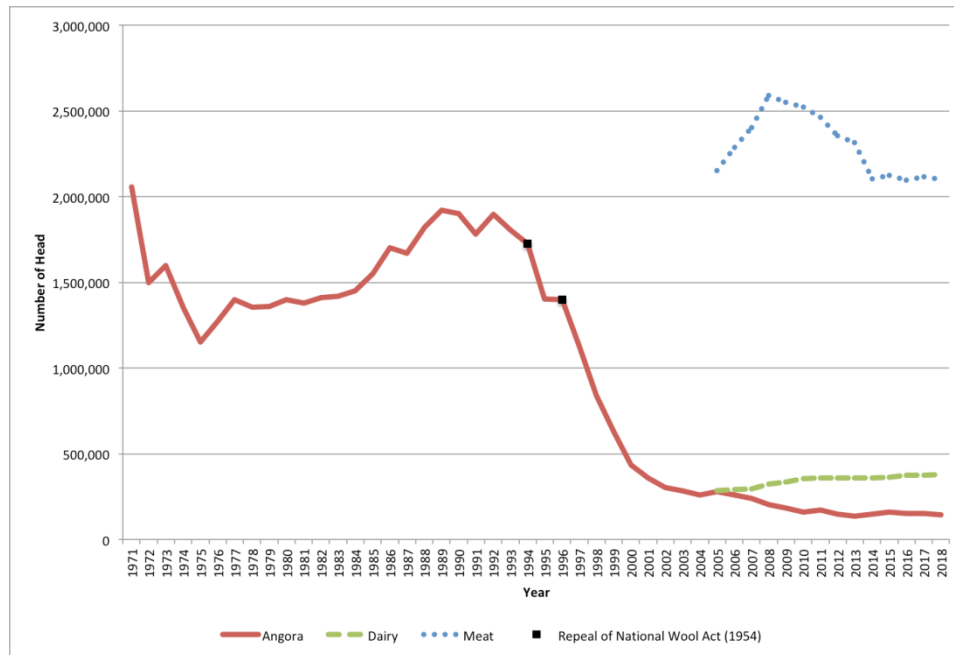


Figure 3. Inventory Numbers by type Over Years (Source: USDA/NASS)

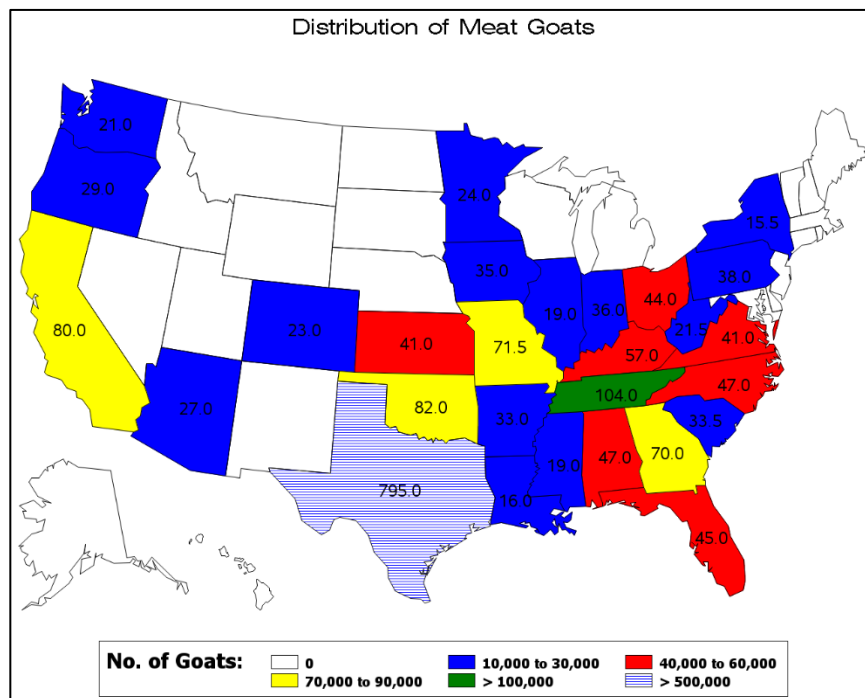


Figure 4. Distribution of Meat Goats by State (2018; Source: USDA/NASS)

going to market. States with zero (0) meat (Figure 4) or dairy (Figure 5) goats does not mean that those states have no meat or dairy goats. USDA disclosure policy is to protect individual producer's identity under the Confidential Information Protection and Statistical Efficiency Act (CIPSEA) of 2012 and if releasing inventory numbers for a state would violate CIPSEA, then USDA will aggregate those states into "Other States." However, states with zero (0) inventories for Angora goats (Figure 6) probably represent no or virtually no Angora goats in those states. For

Figures 4, 5, and 6, the numeric value within the state represents the inventory ( $\times 1,000$  head) for that state and for that type of goat.

### Other Uses

In addition to milk, meat, and fiber production, goats have been used to control brush and other unwanted vegetation (Bebe et al., 2015). Goats will consume vegetation that cattle or sheep will not (Hart, 2001). There is a growing interest in using goats as pack animals (Sharp and Sharp, 2018). Being smaller than mules and more nimble than horses, goats are ideally suited for packing. Goats are highly intelligent animals, affectionate, and make excellent companions (Miranda-de la Lama and Mattiello, 2010).

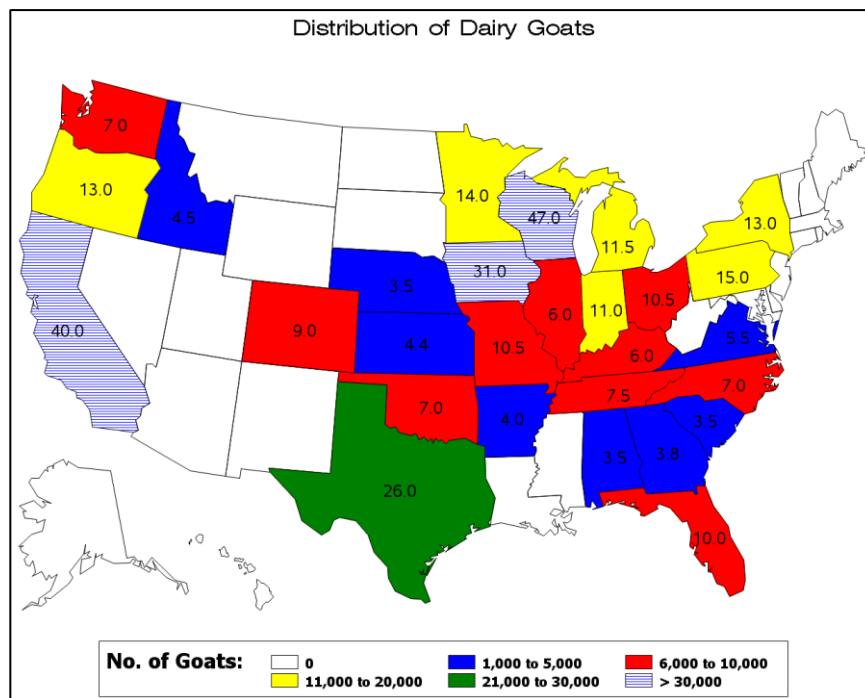


Figure 5. Distribution of Dairy Goats by States (2018; Source: USDA/NASS)

### Conclusion

Goats were originally domesticated in the Fertile Crescent and followed Neolithic farmers to Europe in the west and Asia in the east. Goats are an introduced species into North America and were brought here primarily by Spanish and English explorers and settlers. The primary goat industries in the United States are meat, dairy, and fiber production. Meat goat inventories are the largest sector, followed by dairy, and then fiber. Angora (fiber) goat inventories have declined dramatically over the last half-century.

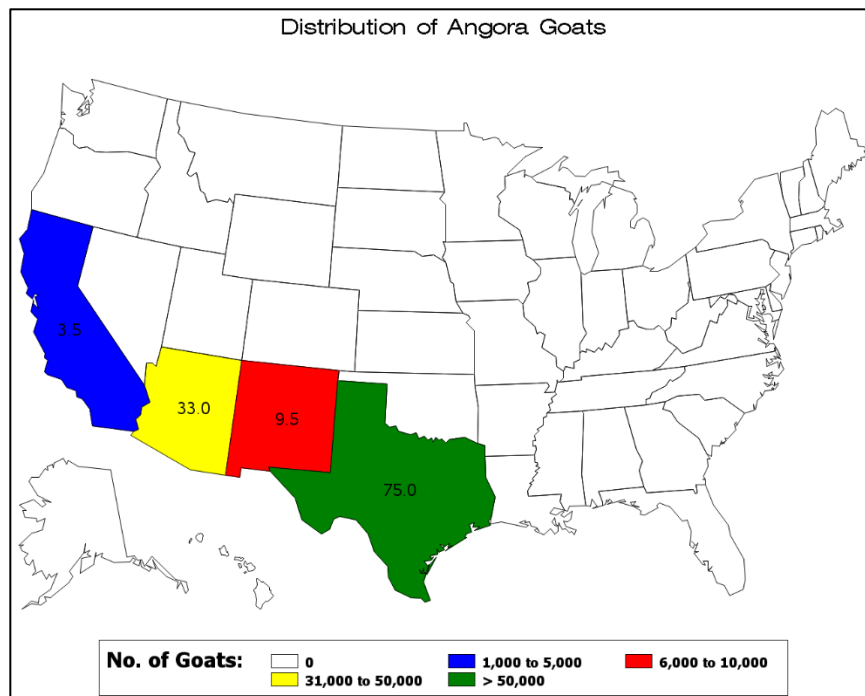


Figure 6. Distribution of Angora goats by state (2018; source: USDA/NASS)

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